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URS

February 25, 2003

Ms. Susan Hugo
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Fourth Quarter 2002 Groundwater Monitoring Report
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California
URS Project #38465940

Dear Ms. Hugo:

On behalf of Atlantic Richfield Company (ARCO-an affiliated company of the Group Environmental Management Company), URS Corporation (URS) is submitting the *Fourth Quarter 2002 Groundwater Monitoring Report* for ARCO Service Station #2169, located at 889 West Grand Avenue, Oakland, California.

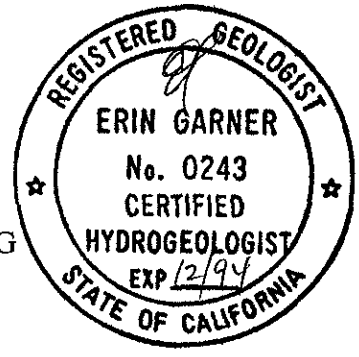
If you have any questions regarding this submission, please call me at (510) 874-3280.

Sincerely,

URS CORPORATION

Scott Robinson
Project Manager

Erin Garner, CHG
Project Director



Enclosure: Fourth Quarter 2002 Groundwater Monitoring Report

cc: Mr. Paul Supple, ARCO, P.O. Box 6549, Moraga, CA 94570

URS Corporation
500 12th Street, Suite 200
Oakland, CA 94607-4014
Tel: 510.893.3600
Fax: 510.874.3268

Atlantic Richfield Company
(a BP affiliated company)

P.O. Box 6549
Moraga, California 94570
Phone: (925) 299-8891
Fax: (925) 299-8872

February 27, 2003

Re: Fourth Quarter 2002 Groundwater Monitoring Report
ARCO Station #2169
889 W Grand Ave
Oakland, CA

I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by:

Paul Supple
Environmental Business Manager

REPORT

FOURTH QUARTER 2002 GROUNDWATER MONITORING

ARCO SERVICE STATION # 2169
889 WEST GRAND AVENUE
OAKLAND, CALIFORNIA

Prepared for
Atlantic Richfield Company

February 25, 2003

URS Corporation
500 12th Street, Suite 200
Oakland, California 94607

38465940

Date: February 25, 2003
Quarter: 4Q 02

ATLANTIC RICHFIELD COMPANY QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.:	2169	Address:	889 West Grand Avenue, Oakland, California
Atlantic Richfield Co. Environmental Engineer:			Paul Supple
Consulting Co./Contact Person:			URS Corporation/ Scott Robinson
Consultant Project No.:			38465940
Primary Agency.			ACHCSA

WORK PERFORMED THIS QUARTER (Fourth – 2002):

1. Performed fourth quarter 2002 monitoring event on November 27, 2002.
2. Prepared third quarter 2002 groundwater monitoring report.

WORK PROPOSED FOR NEXT QUARTER (First – 2003):

1. Perform first quarter 2003 groundwater monitoring event.
2. Prepare fourth quarter 2002 groundwater monitoring report.

Current Phase of Project	GW monitoring/sampling
Frequency of Groundwater Sampling:	Annual (1st Quarter): A-3, A-4 Semi-annual (1st/3nd Quarter): A-2, AR-1, AR-2 Quarterly: A-1, A-5, A-6, ADR-1, ADR-2
Frequency of Groundwater Monitoring:	Quarterly
Is Free Product (FP) Present On–Site:	No
FP Recovered this Quarter:	None
Cumulative FP Recovered to Date:	4.8 gallons, wells ADR-1 and ADR-2
Bulk Soil Removed This Quarter:	None
Bulk Soil Removed to Date:	2,196 cubic yards of TPH impacted soil
Current Remediation Techniques:	Natural Attenuation
Approximate Depth to Groundwater:	10.47 (A-6) to 12.22 (A-3) feet
Groundwater Gradient (direction)	West
Groundwater Gradient (magnitude)	0.003 feet per foot

DISCUSSION:

TPH-g was detected in four of the five wells sampled this quarter at concentrations ranging from 98 µg/L (A-1) to 1,800 µg/L (ADR-2). Benzene was detected in four wells at concentrations ranging from 0.54 µg/L (ADR-1) to 240 µg/L (ADR-2). MTBE was detected in four wells at concentrations ranging from 1.1 µg/L (ADR-1) to 74 µg/L (ADR-2).

RECOMMENDATIONS:

We recommend removing wells A-3 and A-4 from the annual sampling because there have been no detections above the laboratory reporting limits. We further recommend reducing the sampling frequency of wells A-2, AR-1 and AR-2 from semi-annually to annually due to the consistently low to non-detect values for the constituents of concern. Well ADR-1 should be reduced from quarterly to annual sampling for the same reasons. All of the wells would continue to be gauged quarterly for groundwater levels.

ATTACHMENTS:

- Table 1 – Groundwater Elevation and Analytical Data
- Table 2 – Groundwater Flow Direction and Gradient
- Figure 1 – Groundwater Elevation Contour and Analytical Summary Map – November 27, 2002
- Attachment A – Field Procedures and Field Data Sheets
- Attachment B – Laboratory Procedures, Certified Analytical Reports, and Chain-of-Custody Records
- Attachment C – Historical Groundwater and Soil Vapor Extraction System Data
- Attachment D – EDCC Report and EDF/Geowell Submittal Confirmation

Table 1
Groundwater Elevation and Analytical Data

ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (mg/L)	Benzene (mg/L)	Toluene (mg/L	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
AR-1	06/26/00	15 61	11.59	4.02	NA	NA	NA	NA	NA	NA
	07/20/00		12.06	3.55	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	6
	09/19/00		11.89	3.72	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<3
	12/26/00		11.95	3.66	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	03/20/01[a]		NM	NM	NS	NS	NS	NS	NS	NS
	06/12/01		11.87	3.74	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	17
	09/23/01		12 42	3.19	NS	NS	NS	NS	NS	NS
	12/28/01		7.62	7.99	ND<50	ND<0 5	ND<0.5	ND<0 5	ND<0.5	ND<2.5
	03/21/02		9 37	6 24	NS	NS	NS	NS	NS	NS
	04/17/02		10.43	5.18	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	08/14/02		12 08	3.53	ND<50	ND<0.5	ND<0.5	ND<0.5	1.3	ND<2 5
	11/27/02		**12.00**	**3.61**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
AR-2	06/26/00	15.28	11.79	3.49	NA	NA	NA	NA	NA	NA
	07/20/00		12.07	3.21	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<3
	09/19/00		12.08	3.2	ND<50	ND<0 5	ND<0.5	ND<0 5	ND<1.0	ND<3
	12/26/00		11.95	3 33	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2 5
	03/20/01		10 50	4.78	NS	NS	NS	NS	NS	NS
	06/12/01		11.73	3.55	ND<50	ND<0 5	ND<0.5	ND<0.5	ND<0.5	82
	09/23/01		12.43	2 85	NS	NS	NS	NS	NS	NS
	12/28/01		8.60	6.68	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	30
	03/21/02		9.49	5.79	NS	NS	NS	NS	NS	NS
	04/17/02		10.37	4.91	ND<50	ND<0.5	ND<0.5	ND<0 5	ND<0.5	3.2
	08/14/02		12.13	3.15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	11/27/02		**12.08**	**3.20**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

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Oakland, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (mg/L)	Benzene (mg/L)	Toluene (mg/L	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
ADR-1	06/26/00	13.95	10 55	3.40	NA	NA	NA	NA	NA	NA
	07/20/00		10.85	3.10	180	29	ND<0.5	0.8	ND<1.0	22
	09/19/00		11.08	2.87	120	7.4	ND<0.5	1.2	ND<1.0	22
	12/26/00		10.93	3 02	ND<50	1.29	ND<0.5	ND<0.5	ND<0.5	14.7
	03/20/01		9.32	4.63	225	23.4	ND<0.5	8.71	4.13	10.8
	06/12/01		10.65	3.30	250	23	0.5	13	4.2	7.5
	09/23/01		11.25	2.70	ND<50	1.4	ND<0.5	ND<0.5	0.57	2.8
	12/28/01		8.43	5.52	250	16	ND<0.5	1.2	4.1	6.8
	03/21/02		8.27	5.68	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2 5
	04/17/02		9.17	4.78	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	08/14/02		11.88	2 07	ND<50	1.1	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	11/27/02		**10.91**	**3.04**	**ND<50**	**0.54**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**1.1**
ADR-2	06/26/00	14.64	11.22	3.42	NA	NA	NA	NA	NA	NA
	07/20/00		11.60	3 04	12,000	410	2 5	540	720	23
	09/19/00		11.81	2.83	1,400	530	5	680	740	34
	12/26/00		11.52	3.12	901	26.6	ND<5.0	21.4	32.5	32.8
	03/20/01		10.10	4 54	Sheen	Sheen	Sheen	Sheen	Sheen	Sheen
	06/12/01		11.41	3.23	Sheen	Sheen	Sheen	Sheen	Sheen	Sheen
	09/23/01		11.98	2.66	5300	370	ND<5.0	550	96	60
	12/28/01		9.48	5.16	2,600	190	ND<5.0	160	29	61
	03/21/02		9.1	5 54	180	6	ND<0.5	4.5	3.2	15
	04/17/02		9.93	4.71	730	86	ND<0 5	13	ND<0.5	ND<25
	08/14/02		12.09	2.55	1,300 [b]	170	ND<10	100	47	ND<50
	11/27/02		**11.66**	**2.98**	**1,800** [b]	**240**	**3.1**	**120**	**14**	**74**

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Oakland, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (mg/L)	Benzene (mg/L)	Toluene (mg/L	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
A-1	06/26/00	14.16	10.75	3.41	NA	NA	NA	NA	NA	NA
	07/20/00		11.01	3.15	3,900	1,100	28	12	46	25
	09/19/00		11.26	2.90	4,800	2,400	27	20	57	32
	12/26/00		10.96	3.20	429	104	2.85	12.2	9.91	18.7
	03/20/01		9.59	4.57	ND<500	13.9	7.12	13.9	23.2	ND<25
	06/12/01		10.83	3.33	140	2.2	ND<0.5	8.7	9.2	25
	09/23/01		11.43	2.73	ND<50	ND<0 50	ND<0.50	ND<0.50	ND<0.50	4.5
	12/28/01		8.66	5.50	930	250.0	7.6	21	13	ND<25
	03/21/02		8.43	5.73	ND<50	ND<0 5	ND<0.5	ND<0.5	1.2	ND<2 5
	04/17/02		9.36	4.80	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	08/14/02		11 12	3.04	170 [b]	8.4	ND<0.5	ND<0.5	1.4	4.9
	11/27/02		11.11	3.05	98 [b]	2.9	0.75	ND<0.5	ND<0.5	6.4
A-2	06/26/00	14.55	11.27	3.28	NA	NA	NA	NA	NA	NA
	07/20/00		11.52	3.03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<3
	09/19/00		11.63	2 92	NS	NS	NS	NS	NS	NS
	12/26/00		11.44	3.11	ND<50	ND<0.5	ND<0.5	ND<0 5	ND<0.5	ND<2.5
	03/20/01		10 08	4.47	NS	NS	NS	NS	NS	NS
	06/12/01		11.35	3.2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	09/23/01		11.92	2.63	NS	NS	NS	NS	NS	NS
	12/28/01		9.31	5.24	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0 5	ND<2 5
	03/21/02		9.05	5.5	NS	NS	NS	NS	NS	NS
	04/17/02		9.88	4.67	52	ND<0.5	ND<0.5	ND<0.5	ND<0.5	26
	08/14/02		11.62	2.93	ND<50	ND<0.5	ND<0.5	ND<0.5	1.2 [c]	ND<2.5
	11/27/02		11.56	2.99	NS	NS	NS	NS	NS	NS

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Oakland, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (mg/L)	Benzene (mg/L)	Toluene (mg/L	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
A-3	06/26/00	15.75	11 98	3.77	NS	NS	NS	NS	NS	NS
	07/20/00		12.21	3.54	NS	NS	NS	NS	NS	NS
	09/19/00		12.50	3.25	NS	NS	NS	NS	NS	NS
	12/26/00		12 17	3.58	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	03/20/01		10.70	5.05	NS	NS	NS	NS	NS	NS
	06/12/01		12.09	3.66	NS	NS	NS	NS	NS	NS
	09/23/01		12.65	3.1	NS	NS	NS	NS	NS	NS
	12/28/01		9.94	5 81	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5
	03/21/02		9.69	6.06	NS	NS	NS	NS	NS	NS
	04/17/02		10.61	5.14	NS	NS	NS	NS	NS	NS
	08/14/02		12.27	3.48	NS	NS	NS	NS	NS	NS
	11/27/02		**12.22**	**3.53**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
A-4	06/26/00	15.25	10.99	4.26	NS	NS	NS	NS	NS	NS
	07/20/00		11.16	4 09	NS	NS	NS	NS	NS	NS
	09/19/00		11.97	3.28	NS	NS	NS	NS	NS	NS
	12/26/00		11.19	4.06	ND<50	ND<0.5	ND<0.5	ND<0 5	ND<0.5	ND<2.5
	03/20/01		9.81	5.44	NS	NS	NS	NS	NS	NS
	06/12/01		11.12	4.13	NS	NS	NS	NS	NS	NS
	09/23/01		11.63	3 62	NS	NS	NS	NS	NS	NS
	12/28/01		8.41	6.84	ND<50	ND<0.5	ND<0.5	ND<0 5	ND<0.5	ND<2.5
	03/21/02		8.63	6.62	NS	NS	NS	NS	NS	NS
	04/17/02		9.68	5.57	NS	NS	NS	NS	NS	NS
	08/14/02		11.31	3.94	NS	NS	NS	NS	NS	NS
	11/27/02		**11.25**	**4.00**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

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Oakland, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPH as Gasoline (mg/L)	Benzene (mg/L)	Toluene (mg/L	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
A-5	06/26/00	13.51	10.04	3.47	NA	NA	NA	NA	NA	NA
	07/20/00		10.31	3.20	730	140	11	ND<0.5	8.9	3
	09/19/00		10.55	2.96	160	13	ND<0.5	2.8	1.9	ND<3
	12/26/00		10.37	3.14	8,120	465	108	659	1,450	ND<250
	03/20/01		8.81	4.70	7,990	1110	473	611	1,580	ND<250
	06/12/01		10.13	3.38	450	91	18	35	95	ND<5.0
	09/23/01		10.80	2.71	110	20	ND<0.5	5.0	5.0	2.7
	12/28/01		8.17	5.34	320	24	2	20	27	5
	03/21/02		7.78	5.73	2,500	420	85	130	350	31
	04/17/02		8.68	4.83	1,300	190	36	67	210	ND<25
	08/14/02		10.41	3.10	840 [b]	150	ND<5.0	68	41	ND<25
	11/27/02		**10.50**	**3.01**	**300** [b]	**26**	**2.3**	**17**	**6**	**ND<0.5**
A-6	06/26/00	13.51	10.09	3.42	NA	NA	NA	NA	NA	NA
	07/20/00		10.91	2.60	170	ND<0 5	ND<0.5	0.6	2.0	6
	09/19/00		11.27	2.24	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	6
	12/26/00		10 65	2.86	56.2	ND<0.5	ND<0.5	ND<0 5	ND<0.5	8 17
	03/20/01		8.72	4.79	216	ND<0 5	ND<0.5	ND<0.5	1.8	19.9
	06/12/01		10.80	2 71	80	0.62	ND<0.5	ND<0.5	ND<0.5	15
	09/23/01		10.79	2.72	450	1.7	1 9	2.3	3.3	53
	12/28/01		8.05	5.46	270	0.98	3.5	0.77	1.4	26
	03/21/02		7.83	5.68	130	ND<0 5	ND<0.5	ND<0.5	ND<0.5	19
	04/17/02		8.73	4.78	ND<50	ND<0.5	ND<0 5	ND<0.5	ND<0.5	16
	08/14/02		10 43	3.08	980 [b]	4.8	2 6	2.0	4 9	75
	11/27/02		**10.47**	**3.04**	**280** [b]	**ND<0.5**	**0.74**	**ND<0.5**	**ND<0.5**	**16**

TPH	= Total Petroleum Hydrocarbons
MTBE	= Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted
mg/L	= Micrograms per liter
NM	= Not measured
NC	= Not calculated
NA	= Not analyzed
NS	= Not sampled
ND<	= Not detected at or above specified laboratory method detection limit
a	= Well was covered by stockpiled soil and not accessible
b	= Chromatogram Pattern Gasoline C6-C10
c	= Primary and confirmation results varied by greater than 40% RPD The values may still be useful for their intended purpose

Source. The data within this table collected prior to August 2002 was provided to URS by Group Environmental Management Company and their previous consultants URS has not verified the accuracy of this information

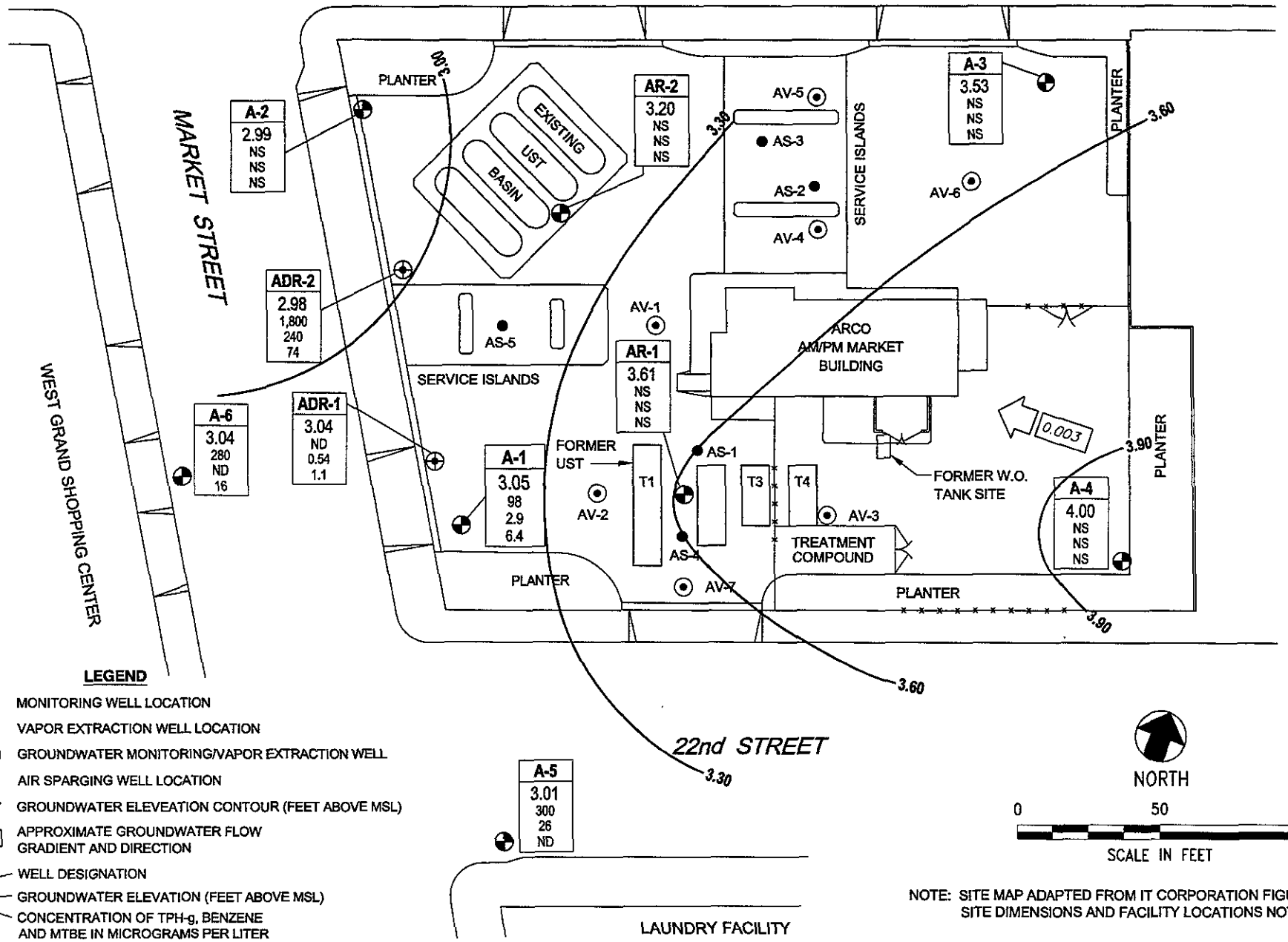
Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
07/20/00	Northwest	0.004
09/19/00	West-Northwest	0.003
12/26/00	Northwest	0.004
03/20/01	Northwest	0.003
06/12/01	Northwest	0.004
09/23/01	Northwest	0.004
12/28/01	Variable	Variable
03/21/02	Northwest	0.004
04/17/02	Northwest	0.003
08/14/02	West	0.003
11/27/02	**West**	**0.003**

Source: The data within this table collected prior to August 2002 was provided to URS by Group Environmental Management Company and their previous consultants. URS has not verified the accuracy of this information.

X:\x_env\waste\BP GEM\Sites\Scott Robinson\Paul Supple\2169\Reports\Monitoring\Qtr. 4, 2002\Drawings\GWEC-AS_11-27.dwg



LEGEND

- A-1 — MONITORING WELL LOCATION
- AV-1 — VAPOR EXTRACTION WELL LOCATION
- ADR-1 — GROUNDWATER MONITORING/VAPOR EXTRACTION WELL
- AS-1 — AIR SPARGING WELL LOCATION
- 3.00 — GROUNDWATER ELEVEATION CONTOUR (FEET ABOVE MSL)
- 0.003 — APPROXIMATE GROUNDWATER FLOW GRADIENT AND DIRECTION
- Well — WELL DESIGNATION
- ELEV — GROUNDWATER ELEVATION (FEET ABOVE MSL)
- TPH-g / Benzene / MTBE — CONCENTRATION OF TPH-g, BENZENE AND MTBE IN MICROGRAMS PER LITER
- ND — NOT DETECTED
- NS — NOT SAMPLED

NORTH

0 50 100

SCALE IN FEET

NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

URS

Project No. 38486121

Arco Service Station 2169
889 West Grand Avenue
Oakland, California

GROUNDWATER ELEVATION CONTOUR AND ANALYTICAL SUMMARY MAP
Fourth Quarter 2002 (November 27, 2002)

FIGURE 1

ATTACHMENT A

FIELD PROCEDURES AND FIELD DATA SHEETS

FIELD PROCEDURES

Sampling Procedures

The sampling procedure for each well consists first of measuring the water level and depth to bottom, and checking for the presence of free phase petroleum product (free product), using either an electronic indicator and a clear Teflon™ bailer or an oil-water interface probe. Wells not containing free product are purged approximately three casing volumes of water (or until dewatered) using a centrifugal pump, gas displacement pump, or bailer. Equipment and purging method used for the current sampling event is noted on the attached field data sheets. During purging, temperature, pH, and electrical conductivity are monitored to document that these parameters are stable prior to collecting samples. After purging, water levels are allowed to partially (approximately 80%) recover. Groundwater samples (both purge and no purge) are collected using a Teflon bailer, placed into appropriate Environmental Protection Agency- (EPA) approved containers, labeled, logged onto chain-of-custody records, and transported on ice to a California State-certified laboratory. Wells with free product are not sampled and free product is removed according to California Code of Regulation, Title 23, Div. 3, Chap. 16, Section 2655, UST Regulations.

WELL GAUGING DATA

Project # 021127-MT1 Date 11-27-02 Client 2169

Site 889 W. Grand Ave, Oakland, CA

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or (TOC)	NP / P / GO
A-1	3					11.11	24.50		P
A-2	3					11.56	26.20		G
A-3	3					12.22	30.10		G
A-4	3					11.25	28.40		G
A-5	2					10.50	30.00		5'
A-6	2					10.47	28.50		5'
AR-1	6					12.00	28.00		G
AR-2	4					12.08	29.30		G
ADR-1	4					10.91	21.90		5'
ADR-2	4					11.66	26.30		5'

ARCO / BP WELL MONITORING DATA SHEET

BTS #: 021127-MTI	Station # 2169
Sampler: M. TOLL	Date: 11-27-02
Well I.D.: A-1	Well Diameter: 2 (3) 4 6 8 ___
Total Well Depth: 24.50	Depth to Water: 11.11
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Purge Method: Bailer; (Disposable Bailer); Middleburg; Electric Submersible; Extraction Pump; Other: ___

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Other: ___

Top of Screen: N/A

If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

5 (1 Case Volume (Gals.)) x 3 (Specified Volumes) = 15 (Calculated Volume) Gals.

Time	Temp (°F)	pH	Conductivity (mS or µS)	Gals. Removed	Observations
1050	71.0	7.1	1027	5	
1058	72.2	7.0	1039	10	
1105	72.3	7.0	1054	15	

Did well dewater? Yes (No) Gallons actually evacuated: 15

Sampling Time: 1110 Sampling Date: 11-27-02

Sample I.D.: A-1 Laboratory: Pace (Sequoia) Other ___

Analyzed for: (TPH-G) (BTEX) (MTBE) TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	1.6	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

ARCO / BP WELL MONITORING DATA SHEET

BTS #: 021127-MTI	Station # 2169
Sampler: M. TOLL	Date: 11-27-02
Well I.D.: A-5	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 30.00	Depth to Water: 10.50
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Purge Method: Bailer / Disposable Bailer / Middleburg / Electric Submersible / Extraction Pump / Other: ____

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Other: ____

Top of Screen: ~~5~~ 5'

If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

____ (1 Case Volume (Gals.)) X ____ (Specified Volumes) = ____ (Calculated Volume) Gals.

Time	Temp (°F)	pH	Conductivity (mS or µS)	Gals. Removed	Observations
0940	66.4	7.2	1021	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Time: 0940 Sampling Date: 11-27-02

Sample I.D.: A-5 Laboratory: Pace (Sequoia) Other ____

Analyzed for: (TPH-G) (BTEX) (MTBE) TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	1.16 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

ARCO / BP WELL MONITORING DATA SHEET

BTS #: 021127-MTI	Station # 2169
Sampler: M. TOLL	Date: 11-27-02
Well I.D.: A-6	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 29.50	Depth to Water: 10.47
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Purge Method: Bailer / Disposable Bailer / Middleburg / Electric Submersible / Extraction Pump / Other: ____

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Other: ____

Top of Screen: 5'

If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

____ (1 Case Volume (Gals.)) X ____ (Specified Volumes) = ____ (Calculated Volume) Gals.

Time	Temp (°F)	pH	Conductivity (mS or µS)	Gals. Removed	Observations
0910	68.3	6.9	9960	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Time: 0910 Sampling Date: 11-27-02

Sample I.D.: A-6 Laboratory: Pace (Sequoia) Other ____

Analyzed for: (TPH-G) (BTEX) (MTBE) TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	0.9 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

ARCO / BP WELL MONITORING DATA SHEET

BTS #: 021127-MTI	Station # 2169
Sampler: M. TOLL	Date: 11-27-02
Well I.D.: ADR-1	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth: 21.90	Depth to Water: 10.91
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Purge Method: Bailer / Disposable Bailer / Middleburg / Electric Submersible / Extraction Pump / Other: ____

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Other: ____

Top of Screen: 5'

If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

____ (1 Case Volume (Gals.)) X ____ (Specified Volumes) = ____ (Calculated Volume) Gals.

Time	Temp (°F)	pH	Conductivity (mS or µS)	Gals. Removed	Observations
0950	71.3	6.9	1276	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Time: 0950 Sampling Date: 11-27-02

Sample I.D.: ADR-1 Laboratory: Pace (Sequoia) Other____

Analyzed for: (TPH-G) (BTEX) (MTBE) TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	1.9 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

ARCO / BP WELL MONITORING DATA SHEET

BTS #: 021127-MTI	Station # 2169
Sampler: M. TOLL	Date: 11-27-02
Well I.D.: ADR-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 26.20	Depth to Water: 11.60
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Purge Method: Bailer / Disposable Bailer / Middleburg / Electric Submersible / Extraction Pump / Other: ___

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Other: ___

Top of Screen: 5'

If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

___ (1 Case Volume (Gals.)) X ___ (Specified Volumes) = ___ (Calculated Volume) Gals.

Time	Temp (°F)	pH	Conductivity (mS or µS)	Gals. Removed	Observations
1025	69.6	6.9	1440	—	Clear

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Time: 1025 Sampling Date: 11-27-02

Sample I.D.: ADR-2 Laboratory: Pace (Sequoia) Other ___

Analyzed for: (TPH-G) (BTEX) (MTBE) TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	0.6 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

bp

Chain of Custody Record

Project Name 02127-MT1
BP BU/GEM CO Portfolio:
BP Laboratory Contract Number:
Requested Due Date (mm/dd/yy)

ıte: 11/27/02

On-site Time: 0900	Temp: 60s°
Off-site Time: 1130	Temp: 72°
Sky Conditions: Sunny / cool	
Meteorological Events:	
Wind Speed:	Direction:

d To:	
Name: SEQUOIA	
Address: 885 Jarvis Dr.	
Morgan Hill, CA 95037	
PM: Latonya Pelt	
/Fax: 408-776-9600 / 408-782-6308	
ort Type & QC Level: Send EDF Reports	
GEM Account No.:	

BP/GEM Facility No.:	
BP/GEM Facility Address:	889 W. GRAND AVE, OAKLAND, CA
Site ID No.	ARCO 2169
Site Lat/Long:	
California Global ID #:	T0600100112
BP/GEM PM Contact:	PAUL SUPPLE
Address:	
Tele/Fax:	

Consultant/Contractor:	URS
Address:	500 12th St., Ste. 200
	Oakland, CA 94609-4014
e-mail EDD:	syed_rehan@urscorp.com
Consultant/Contractor Project No.:	J5-00002169.01 00427
Consultant Tele/Fax:	510-874-1735/510-874-3268
Consultant/Contractor PM:	Scott Robinson
Invoice to: Consultant/Contractor or	BP/GEM (Circle one)
BP/GEM Work Release No:	INTRIM -50325

Bottle Order No:			Matrix					Preservatives						Requested Analysis											
ı No.	Sample Description	Time	Soil/Solid	Water/Liquid	Sediments	Air	Laboratory No.	No. of containers	Unpreserved	H_2SO_4	HNO_3	HCl		TPH-G / BTEX (8015 / 8021)	TPH-D (8015)	MTBE (8021)	MTBE, TAME, ETBE DIPE, TBA (8260)	1,2-DCA & EDB (8260)							Sample Point Lat/Long and Comments
1	A-1	1110		X				3				X		X		X									
2	A-5	0940		X				3				X		X		X									
3	A-6	0910		X				3				X		X		X									
4	ADR-1	0850		X				3				X		X		X									
5	ADR-2	1025		X				3				X		X		X									
6																									
7																									
8																									
9																									
0																									

ıpler's Name:	Michael Toll	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
ıpler's Company:	Blaine Tech	[signature] / BTS	12/3/02	1321	[signature]	12/3/02	1320
ıment Date:							
ıment Method:							
ıment Tracking No:							

cial Instructions: Address Invoice to BP/GEM but send to URS for approval

tody Seals In Place Yes No Temperature Blank Yes___ No___ Cooler Temperature on Receipt ___°F/C Trip Blank Yes___ No___

WELLHEAD INSPECTION CHECKLIST

Client Arco 2169 Date 11-27-02

Site Address 989 W. Grand Ave, Oakland, CA

Job Number 021127-MT1 Technician M. TOH

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
A-1	✓	✓						
A-2	✓							
A-3	✓							
A-4	✓							
A-5				✓	✓			✓
A-6				✓	✓			
AR-1	✓							
AR-2	✓							
ADR-1	✓							
ADR-2	✓							

NOTES: A-1 Vault Removed 25 gallons of H2O w/ Submersible Teel.

BP GEM OIL COMPANY TYPE **A** BILL OF LADING

SOURCE RECORD **BILL OF LADING** FOR NON-HAZARDOUS PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT BP GEM OIL COMPANY FACILITIES IN THE STATE OF CALIFORNIA. THE NON-HAZARDOUS PURGE- WATER WHICH HAS BEEN RECOVERED FROM GROUND- WATER WELLS IS COLLECTED BY THE CONTRACTOR, MADE UP INTO LOADS OF APPROPRIATE SIZE AND HAULED BY DILLARD ENVIRONMENTAL TO THE ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY IN LIVERMORE, CALIFORNIA.

The contractor performing this work is BLAINE TECH SERVICES, INC. (BTS), 1680 Rogers Avenue, San Jose, CA 95112 (phone [408] 573-0555). Blaine Tech Services, Inc. is authorized by BP GEM OIL COMPANY to recover, collect, apportion into loads the Non-Hazardous Well Purgewater that is drawn from wells at the BP GEM Oil Company facility indicated below and deliver that purgewater to BTS. Transport routing of the Non-Hazardous Well Purgewater may be direct from one BP GEM facility to the designated destination point; from one BP GEM facility to the designated destination point via another BP GEM facility; from a BP GEM facility to the designated destination point via the contractor's facility, or any combination thereof. The Non-Hazardous Well Purgewater is and remains the property of BP GEM Oil Company.

This **Source Record BILL OF LADING** was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the BP GEM Oil Company facility described below:

2169

Station #

809 W. Grand Ave.

Station Address

OAKLAND, CA

Total Gallons Collected From Groundwater Monitoring Wells:

40

added equip. rinse water 3

any other adjustments

TOTAL GALS. RECOVERED 43

loaded onto BTS vehicle # 50

BTS event # 021127-MT1

time 1130

date 11/27/02

signature

* *

REC'D AT BTS-SJ

time

date 11/27/02

unloaded by

signature

ATTACHMENT B

LABORATORY PROCEDURES, CERTIFIED ANALYTICAL REPORTS, AND CHAIN-OF-CUSTODY RECORDS

LABORATORY PROCEDURES

Laboratory Procedures

The groundwater samples were analyzed for the presence of the chemicals mentioned in the chain of custody using standard EPA methods. The methods of analysis for the groundwater samples are documented in the certified analytical report. The certified analytical reports and chain-of-custody record are presented in this attachment. The analytical data provided by the laboratory approved by Group Environmental Management Company have been reviewed and verified by that laboratory.

Sequoia
Analytical

885 Jarvis Dr
Morgan Hill, CA 95037
(408) 776-9600
FAX (408) 782-6308
www.sequoialabs.com

23 December, 2002

Scott Robinson
URS Corporation
500 12th Street, Suite 100
Oakland, CA 94607

RE: ARCO #2169, Oakland, Ca
Sequoia Work Order: MLL0092

Enclosed are the results of analyses for samples received by the laboratory on 12/03/02 14:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Latonya K. Pelt

Latonya Pelt
Project Manager

CA ELAP Certificate #1210

Sequoia Analytical

885 Jarvis Dr
Morgan Hill, CA 95037
(408) 776-9600
FAX (408) 782-6308
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URS Corporation	Project: ARCO #2169, Oakland, Ca	MLL0092
500 12th Street, Suite 100	Project Number: ARCO #2169, Oakland, CA	**Reported:**
Oakland CA, 94607	Project Manager: Scott Robinson	12/23/02 12:39

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
A-1	MLL0092-01	Water	11/27/02 11:10	12/03/02 14:50
A-5	MLL0092-02	Water	11/27/02 09:40	12/03/02 14:50
A-6	MLL0092-03	Water	11/27/02 09:10	12/03/02 14:50
ADR-1	MLL0092-04	Water	11/27/02 08:58	12/03/02 14:50
ADR-2	MLL0092-05	Water	11/27/02 10:25	12/03/02 14:50

There were no custody seals that were received with this project.

Sequoia Analytical

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URS Corporation	Project: ARCO #2169, Oakland, Ca	MLL0092
500 12th Street, Suite 100	Project Number: ARCO #2169, Oakland, CA	**Reported:**
Oakland CA, 94607	Project Manager: Scott Robinson	12/23/02 12:39

Volatile Organic Compounds by EPA Method 8260B

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
A-1 (MLL0092-01) Water Sampled: 11/27/02 11:10 Received: 12/03/02 14:50									**A-01**
Methyl tert-butyl ether	**6.4**	0.50	ug/l	1	2L10015	12/10/02	12/10/02	EPA 8260B	
Benzene	**2.9**	0.50	"	"	"	"	"	"	
Toluene	**0.75**	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Gasoline Range Organics (C6-C10)	**98**	50	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*88.0 %*	*78-129*		"	"	"	"	
A-5 (MLL0092-02) Water Sampled: 11/27/02 09:40 Received: 12/03/02 14:50									**A-01**
Methyl tert-butyl ether	ND	0.50	ug/l	1	2L09008	12/09/02	12/10/02	EPA 8260B	
Benzene	**26**	0.50	"	"	"	"	"	"	
Toluene	**2.3**	0.50	"	"	"	"	"	"	
Ethylbenzene	**17**	0.50	"	"	"	"	"	"	
Xylenes (total)	**6.0**	0.50	"	"	"	"	"	"	
Gasoline Range Organics (C6-C10)	**300**	50	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*86.0 %*	*78-129*		"	"	"	"	
A-6 (MLL0092-03) Water Sampled: 11/27/02 09:10 Received: 12/03/02 14:50									**A-01**
Methyl tert-butyl ether	**16**	0.50	ug/l	1	2L09008	12/09/02	12/10/02	EPA 8260B	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	**0.74**	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Gasoline Range Organics (C6-C10)	**280**	50	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*90.6 %*	*78-129*		"	"	"	"	

Sequoia Analytical

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www.sequoialabs.com

URS Corporation	Project: ARCO #2169, Oakland, Ca	MLL0092
500 12th Street, Suite 100	Project Number: ARCO #2169, Oakland, CA	**Reported:**
Oakland CA, 94607	Project Manager: Scott Robinson	12/23/02 12:39

Volatile Organic Compounds by EPA Method 8260B

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
ADR-1 (MLL0092-04) Water Sampled: 11/27/02 08:58 Received: 12/03/02 14:50									**A-01**
Methyl tert-butyl ether	**1.1**	0.50	ug/l	1	2L09008	12/09/02	12/10/02	EPA 8260B	
Benzene	**0.54**	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Gasoline Range Organics (C6-C10)	ND	50	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*87.2 %*	*78-129*		"	"	"	"	
ADR-2 (MLL0092-05) Water Sampled: 11/27/02 10:25 Received: 12/03/02 14:50									**A-01**
Methyl tert-butyl ether	**74**	2.5	ug/l	5	2L09008	12/09/02	12/10/02	EPA 8260B	
Benzene	**240**	2.5	"	"	"	"	"	"	
Toluene	**3.1**	2.5	"	"	"	"	"	"	
Ethylbenzene	**120**	2.5	"	"	"	"	"	"	
Xylenes (total)	**14**	2.5	"	"	"	"	"	"	
Gasoline Range Organics (C6-C10)	**1800**	250	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*88.4 %*	*78-129*		"	"	"	"	

Sequoia Analytical

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URS Corporation	Project: ARCO #2169, Oakland, Ca	MLL0092
500 12th Street, Suite 100	Project Number: ARCO #2169, Oakland, CA	**Reported:**
Oakland CA, 94607	Project Manager: Scott Robinson	12/23/02 12:39

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2L09008 - EPA 5035										
Blank (2L09008-BLK1)				Prepared & Analyzed: 12/09/02						**A-01**
Methyl tert-butyl ether	ND	0.50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Gasoline Range Organics (C6-C10)	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	*4.33*		"	*5.00*		*86.6*	*78-129*			
Laboratory Control Sample (2L09008-BS1)				Prepared & Analyzed: 12/09/02						**A-01**
Methyl tert-butyl ether	10.6	0.50	ug/l	10.0		106	63-137			
Benzene	9.70	0.50	"	10.0		97.0	78-124			
Toluene	9.77	0.50	"	10.0		97.7	78-129			
Surrogate: 1,2-Dichloroethane-d4	*4.13*		"	*5.00*		*82.6*	*78-129*			
Laboratory Control Sample (2L09008-BS2)				Prepared & Analyzed: 12/09/02						**A-01**
Methyl tert-butyl ether	9.71	0.50	ug/l	8.40		116	63-137			
Benzene	5.04	0.50	"	5.28		95.5	78-124			
Toluene	29.3	0.50	"	31.8		92.1	78-129			
Gasoline Range Organics (C6-C10)	340	50	"	440		77.3	70-113			
Surrogate: 1,2-Dichloroethane-d4	*4.17*		"	*5.00*		*83.4*	*78-129*			
Laboratory Control Sample Dup (2L09008-BSD1)				Prepared: 12/09/02 Analyzed: 12/10/02						**A-01**
Methyl tert-butyl ether	12.3	0.50	ug/l	10.0		123	63-137	14.8	13	QR-02
Benzene	10.5	0.50	"	10.0		105	78-124	7.92	12	
Toluene	9.54	0.50	"	10.0		95.4	78-129	2.38	10	
Surrogate: 1,2-Dichloroethane-d4	*4.46*		"	*5.00*		*89.2*	*78-129*			
Laboratory Control Sample Dup (2L09008-BSD2)				Prepared: 12/09/02 Analyzed: 12/10/02						**A-01**
Methyl tert-butyl ether	10.2	0.50	ug/l	8.40		121	63-137	4.92	13	
Benzene	5.31	0.50	"	5.28		101	78-124	5.22	12	

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FAX (408) 782-6308
www.sequoialabs.com

URS Corporation	Project: ARCO #2169, Oakland, Ca	MLL0092
500 12th Street, Suite 100	Project Number: ARCO #2169, Oakland, CA	**Reported:**
Oakland CA, 94607	Project Manager: Scott Robinson	12/23/02 12:39

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2L09008 - EPA 5035										
Laboratory Control Sample Dup (2L09008-BSD2)				Prepared: 12/09/02 Analyzed: 12/10/02						**A-01**
Toluene	30.8	0.50	ug/l	31.8		96 9	78-129	4.99	10	
Gasoline Range Organics (C6-C10)	459	50	"	440		104	70-113	29.8	9	A-02,QR-02
Surrogate: 1,2-Dichloroethane-d4	*4.37*		"	*5.00*		*87.4*	*78-129*			
Batch 2L10015 - EPA 5035										
Blank (2L10015-BLK1)				Prepared & Analyzed: 12/10/02						
Methyl tert-butyl ether	ND	0.50	ug/l							
Benzene	ND	0 50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Gasoline Range Organics (C6-C10)	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	*4.34*		"	*5.00*		*86.8*	*78-129*			
Laboratory Control Sample (2L10015-BS1)				Prepared & Analyzed: 12/10/02						
Methyl tert-butyl ether	11.6	0.50	ug/l	10.0		116	63-137			
Benzene	10.4	0.50	"	10.0		104	78-124			
Toluene	9.77	0.50	"	10.0		97.7	78-129			
Surrogate: 1,2-Dichloroethane-d4	*4.49*		"	*5.00*		*89.8*	*78-129*			
Laboratory Control Sample (2L10015-BS2)				Prepared & Analyzed: 12/10/02						
Methyl tert-butyl ether	10.0	0.50	ug/l	8.40		119	63-137			
Benzene	5.29	0.50	"	5.28		100	78-124			
Toluene	33.0	0.50	"	31.8		104	78-129			
Gasoline Range Organics (C6-C10)	444	50	"	440		101	70-113			
Surrogate: 1,2-Dichloroethane-d4	*4.20*		"	*5.00*		*84.0*	*78-129*			

Sequoia Analytical

885 Jarvis Dr
Morgan Hill, CA 95037
(408) 776-9600
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URS Corporation	Project: ARCO #2169, Oakland, Ca	MLL0092
500 12th Street, Suite 100	Project Number: ARCO #2169, Oakland, CA	**Reported:**
Oakland CA, 94607	Project Manager: Scott Robinson	12/23/02 12:39

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2L10015 - EPA 5035										
Laboratory Control Sample Dup (2L10015-BSD1)				Prepared & Analyzed: 12/10/02						
Methyl tert-butyl ether	12.0	0 50	ug/l	10.0		120	63-137	3.39	13	
Benzene	9.98	0.50	"	10 0		99.8	78-124	4.12	12	
Toluene	9.51	0.50	"	10.0		95.1	78-129	2.70	10	
Surrogate: 1,2-Dichloroethane-d4	*4.35*		"	*5.00*		*87.0*	*78-129*			
Laboratory Control Sample Dup (2L10015-BSD2)				Prepared & Analyzed: 12/10/02						
Methyl tert-butyl ether	10.6	0.50	ug/l	8.40		126	63-137	5.83	13	
Benzene	5.15	0.50	"	5.28		97.5	78-124	2.68	12	
Toluene	29.5	0.50	"	31.8		92.8	78-129	11.2	10	QR-02
Gasoline Range Organics (C6-C10)	481	50	"	440		109	70-113	8.00	9	
Surrogate: 1,2-Dichloroethane-d4	*4.60*		"	*5.00*		*92.0*	*78-129*			

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URS Corporation	Project: ARCO #2169, Oakland, Ca	MLL0092
500 12th Street, Suite 100	Project Number: ARCO #2169, Oakland, CA	**Reported:**
Oakland CA, 94607	Project Manager: Scott Robinson	12/23/02 12:39

Notes and Definitions

A-01	Vinyl chloride exceeds the CCC criteria for the continuing calibration. All target compounds pass the individual compound criteria for the continuing calibration.
A-02	This sample exceeded the 12 hour analysis window for this analyte.
QR-02	The RPD result exceeded the control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

bp

Chain of Custody Record

MLL0092

Page 1 of 1

Project Name 02127-MT1

BP BU/GEM CO Portfolio:

BP Laboratory Contract Number:

Date: 11/22/02

Requested Due Date (mm/dd/yy)

On-site Time:	0900 Temp: 65°
Off-site Time:	1130 Temp: 72°
Sky Conditions:	Sunny Clear
Meteorological Events:	
Wind Speed:	Direction:

Send To:	
Lab Name:	SEQUOIA
Lab Address:	885 Jarvis Dr. Morgan Hill, CA 95037
Lab PM:	Latonya Pelt
Tele/Fax:	408-776-9600 / 408-782-6308
Report Type & QC Level:	Send EDF Reports
BP/GEM Account No.:	

BP/GEM Facility No.:	
BP/GEM Facility Address:	889 W. GRAND AVE, OAKLAND, CA
Site ID No.	ARCO 2169
Site Lat/Long:	
California Global ID #:	T0600100112
BP/GEM PM Contact:	PAUL SUPPLE
Address:	
Tele/Fax:	

Consultant/Contractor:	URS
Address:	500 12th St., Ste. 200 Oakland, CA 94609-4014
e-mail EDD:	syed_rehan@urscorp.com
Consultant/Contractor Project No.:	15-00002169.01 00427
Consultant Tele/Fax:	510-874-1735/510-874-3268
Consultant/Contractor PM:	Scott Robinson
Invoice to:	Consultant/Contractor or BP/GEM (circle one)
BP/GEM Work Release No:	INTRIM-50325

Lab Bottle Order No:

Item No.	Sample Description	Time	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Sediments	Matrix: Air	Laboratory No.	No. of containers	Preservatives: Unpreserved	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Requested Analysis: TPH-G / BTEX (8015 / 8021)	Requested Analysis: TPH-D (8015)	Requested Analysis: MTBE (8021)	Requested Analysis: MTBE, TAME, ETBE, DIPE, TBA (8260)	Requested Analysis: 1,2-DCA & EDB (8260)	Sample Point Lat/Long and Comments
1	A-1	1110		X				3				X	X		X			
2	A-5	0940		X				3				X	X		X			
3	A-10	0910		X				3				X	X		X			
4	ADR-1	0858		X				3				X	X		X			
5	ADR-2	1025		X				3				X	X		X			
6																		
7																		
8																		
9																		
10																		

Sampler's Name:	Michael Toll	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	Blaine Tech		12/3/02	1321		12/3/02	1320
Shipment Date:			12/3/02	1450		12/3/02	1458
Shipment Method:							
Shipment Tracking No:							

Special Instructions: Address Invoice to BP/GEM but send to URS for approval

Ice Chest Present Yes ___ No ✓ Temperature Blank Yes ___ No ✓ Cooler Temperature on Receipt 4 °F/C Trip Blank Yes ___ No ✓

White Copy - Laboratory / Yellow Copy - BP/GEM / Pink Copy - Consultant/Contractor

BP COC Rev. 1 2/5/02

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: URS
REC. BY (PRINT): TL
WORKORDER: M12092

DATE Received at Lab: 12/3/02
TIME Received at Lab: 1450
LOG IN DATE: 12-4-02

Drinking water for regulatory purposes: YES / (NO)
Wastewater for regulatory purposes: YES / (NO)

CIRCLE THE APPROPRIATE RESPONSE		LAB SAMPLE #	#	CLIENT ID	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMPLED	REMARKS: CONDITION (ETC.)
1. Custody Seal(s)	Present / (Absent) Intact / Broken*	1		A-1	(3) VOAs HCl	(L)	11/27/02	
2. Chain-of-Custody	(Present) / Absent*	2		A-5	↓	↓	↓	
3. Traffic Reports or Packing List:	Present / (Absent)	3		A-6				
4. Airbill:	Airbill / Sticker Present / (Absent)	4		ADR-1				
5. Airbill #:		5		ADR-2				
6. Sample Labels:	(Present) / Absent							
7. Sample IDs:	(Listed) / Not Listed on Chain-of-Custody							
8. Sample Condition:	(Intact) / Broken* / Leaking*							
9. Does information on custody reports, traffic reports and sample labels agree?	(Yes) / No*					TL		
10. Sample received within hold time:	(Yes) / No*					12/3/02		
11. Proper Preservatives used:	(Yes) / No*							
12. Temp Rec. at Lab: 4°C (Acceptance range for samples requiring thermal pres.:4+/-2°C)	(Yes) / No**							
Exception (if any):								

*If Circled, contact Project Manager and attach record of resolution.

ATTACHMENT C

HISTORICAL GROUNDWATER AND SOIL VAPOR EXTRACTION SYSTEM DATA

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-1	03-24-95	14.16	8.10	ND	6.06	03-24-95	1,200	230	39	34	66	--	--	160		
A-1	06-05-95	14.16	11.13	ND	3.03	06-05-95	1,500	310	27	36	76	--	--	710		
A-1	08-17-95	14.16	11.71	ND	2.45	08-18-95	1,600	470	35	48	110	120	--	240		
A-1	12-04-95	14.16	12.28	ND	1.88	12-04-95	1,200	240	17	25	56	--	120	--		
A-1	03-01-96	14.16	8.78	ND	5.38	03-13-96	1,300	300	74	29	73	100	--	--		
A-1	05-29-96	14.16	9.85	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-29-96	14.16	11.08	ND	3.08	08-29-96	1,200	320	5.9	25	27	110	--	--		
A-1	11-21-96	14.16	10.54	ND	3.62	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	03-26-97	14.16	10.55	ND	3.61	03-26-97	<50	0.8	<0 5	<0.5	<0.5	64	--	--		
A-1	05-21-97	14 16	11 10	ND	3.06	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-08-97	14.16	11.32	ND	2.84	08-08-97	91	7	<0.5	0.5	3.9	<60	--	--		
A-1	11-18-97	14.16	3.46	ND	10.70	11-18-97	54	<0.5	<0.5	<0.5	0.6	27	--	--		
A-1	02-20-98	14 16	7.10	ND	7.06	02-23-98	590	160	22	15	28	70	--	--		
A-1	05-11-98	14.16	9.87	ND	4.29	05-11-98	280	26	<0.5	0.8	2.3	6	--	--		
A-1	07-30-98	14.16	10.73	ND	3.43	07-30-98	1,000	210	5	<5	38	<30	--	--		
A-1	10-08-98	14 16	11.15	ND	3.01	10-08-98	3,100	740	11	<10	24	<60	--	--		
A-1	02-18-99	14.16	8.00	ND	6.16	02-18-99	510	87	7.1	6.4	13	52	--	--		
A-1	05-26-99	14.16	10.60	ND	3.56	05-26-99	240	26	<0 5	1.2	6 2	34	--	--		
A-1	08-23-99	14.16	11 22	ND	2.94	08-23-99	79	3.9	0.6	<0.5	1.7	38	--	--	0.68	NP
A-1	10-27-99	14.16	11.37	ND	2.79	10-27-99	110	2.2	<0 5	<0 5	<1	25	--	--	0.80	NP
A-1	01-31-00	14.16	9.44	ND	4.72	01-31-00	<50	<0 5	<0.5	<0.5	<1	<3	--	--	1.0	NP
A-2	03-24-95	14.55	8.64	ND	5.91	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	06-05-95	14.55	11.72	ND	2 83	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	08-17-95	14.55	12.35	ND	2.20	08-17-95	<50	<0.5	<0.5	<0 5	<0.5	12	--	--		
A-2	12-04-95	14 55	12.74	ND	1 81	12-04-95	<50	<0.5	<0 5	<0.5	<0.5	--	--	--		
A-2	03-01-96	14.55	9.34	ND	5.21	03-13-96	<50	<0.5	0.6	<0.5	1.3	<9	--	--		

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Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-2	05-29-96	14.55	10.40	ND	4.15	05-29-96	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	08-29-96	14.55	11.50	ND	3.05	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	<39	--	--		
A-2	11-21-96	14.55	11.06	ND	3.49	11-21-96	<50	<0.5	<0.5	<0.5	<0.5	<30	--	--		
A-2	03-26-97	14.55	11.12	ND	3.43	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	05-21-97	14.55	11.58	ND	2.97	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	08-08-97	14.55	11.82	ND	2.73	08-08-97	<50	<0.5	<0.5	<0 5	<0.5	<20	--	--		
A-2	11-18-97	14 55	3.33	ND	11.22	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	02-20-98	14.55	7 68	ND	6.87	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	17	--	--		
A-2	05-11-98	14.55	10.45	ND	4.10	05-11-98	Not sampled									
A-2	07-30-98	14.55	11.23	ND	3 32	07-30-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	10-08-98	14.55	11 62	ND	2.93	10-08-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	02-18-99	14.55	8.62	ND	5.93	02-18-99	93	<0.5	<0.5	<0.5	<1	26	--	--		
A-2	05-26-99	14.55	11.16	ND	3.39	05-26-99	<50	<0.5	<0.5	<0.5	<0 5	<3	--	--		
A-2	08-23-99	14.55	11.69	ND	2.86	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.59	
A-2	10-27-99	14.55	11.88	ND	2 67	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.59	
A-2	01-31-00	14.55	10.17	ND	4.38	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3	--	--	1.0	NP
A-3	03-24-95	15 75	8.83	ND	6.92	03-24-95	<50	<0 5	<0.5	<0.5	<0.5	--	--	--		
A-3	06-05-95	15.75	12.44	ND	3.31	06-05-95	Not sampled: well sampled annually									
A-3	08-17-95	15.75	13.04	ND	2 71	08-17-95	Not sampled: well sampled annually									
A-3	12-04-95	15.75	13.57	ND	2.18	12-04-95	Not sampled. well sampled annually									
A-3	03-01-96	15.75	9 90	ND	5.85	03-13-96	<50	<0.5	<0.5	<0 5	<0.5	<3	--	--		
A-3	05-29-96	15.75	11.08	ND	4.67	05-29-96	Not sampled: well sampled annually									
A-3	08-29-96	15.75	12.38	ND	3.37	08-29-96	Not sampled: well sampled annually									
A-3	11-21-96	15.75	11.86	ND	3.89	11-21-96	Not sampled: well sampled annually									
A-3	03-26-97	15.75	11.81	ND	3.94	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-21-97	15.75	12 35	ND	3 40	05-21-97	Not sampled: well sampled annually									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-3	08-08-97	15.75	12.62	ND	3.13	08-08-97	Not sampled, well sampled annually									
A-3	11-18-97	15.75	3.75	ND	12.00	11-18-97	Not sampled: well sampled annually									
A-3	02-20-98	15.75	8.06	ND	7.69	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-11-98	15.75	11.19	ND	4.56	05-11-98	Not sampled: well sampled annually									
A-3	07-30-98	15.75	12.05	ND	3.70	07-30-98	Not sampled: well sampled annually									
A-3	10-08-98	15.75	12.43	ND	3.32	10-08-98	Not sampled: well sampled annually									
A-3	02-18-99	15.75	9.05	ND	6.70	02-18-99	Not sampled: well sampled annually									
A-3	05-26-99	15.75	11.93	ND	3 82	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	08-23-99	15.75	12.57	ND	3.18	08-23-99	Not sampled: well sampled annually								0.88	
A-3	10-27-99	15 75	12.65	ND	3.10	10-27-99	Not sampled: well sampled annually									
A-3	01-31-00	15.75	9.55	ND	6.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP
A-4	03-24-95	15.25	7.20	ND	8 05	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-4	06-05-95	15.25	11.70	ND	3.55	06-05-95	Not sampled, well sampled annually									
A-4	08-17-95	15 25	12.28	ND	2.97	08-17-95	Not sampled: well sampled annually									
A-4	12-04-95	15.25	12.63	ND	2.62	12-04-95	Not sampled: well sampled annually									
A-4	03-01-96	15.25	8.55	ND	6.70	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-29-96	15.25	10.32	ND	4.93	05-29-96	Not sampled: well sampled annually									
A-4	08-29-96	15.25	11.55	ND	3.70	08-29-96	Not sampled well sampled annually									
A-4	11-21-96	15.25	10.83	ND	4 42	11-21-96	Not sampled: well sampled annually									
A-4	03-26-97	15.25	10.97	ND	4.28	03-26-97	<50	<0.5	<0.5	<0 5	<0.5	<3	--	--		
A-4	05-21-97	15.25	11.51	ND	3.74	05-21-97	Not sampled: well sampled annually									
A-4	08-08-97	15.25	11.73	ND	3.52	08-08-97	Not sampled: well sampled annually									
A-4	11-18-97	15.25	4.37	ND	10.88	11-18-97	Not sampled, well sampled annually									
A-4	02-20-98	15.25	6.25	ND	9.00	02-20-98	<50	<0 5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-11-98	15.25	10.33	ND	4.92	05-11-98	Not sampled, well sampled annually									
A-4	07-30-98	15.25	11.25	ND	4.00	07-30-98	Not sampled: well sampled annually									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-4	10-08-98	15.25	11.62	ND	3.63	10-08-98	Not sampled: well sampled annually									
A-4	02-18-99	15.25	7.12	ND	8 13	02-18-99	Not sampled: well sampled annually									
A-4	05-26-99	15.25	11.12	ND	4.13	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	08-23-99	15.25	11.62	ND	3.63	08-23-99	Not sampled: well sampled annually								0.54	
A-4	10-27-99	15.25	11.74	ND	3.51	10-27-99	Not sampled. well sampled annually									
A-4	01-31-00	15.25	9.45	ND	5.80	01-31-00	<50	<0.5	<0.5	<0.5	<1	4	--	--	1.0	NP
A-5	03-24-95	13.51	7.40	ND	6.11	03-24-95	3,300	200	310	130	460	--	--	--		
A-5	06-05-95	13.51	10 43	ND	3.08	06-05-95	57,000	2,700	4,600	1,500	6,800	--	--	--		
A-5	08-17-95	13.51	11.15	ND	2.36	08-18-95	34,000	1,600	2,700	1,100	5,100	<28	--	--		
A-5	12-04-95	13.51	11.42	ND	2 09	12-04-95	61	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-5	03-01-96	13.51	8.11	ND	5.40	03-13-96	11,000	860	960	380	1,600	<100	--	--		
A-5	05-29-96	13.51	9.30	ND	4 21	05-29-96	19,000	1,600	1,900	880	3,300	<100	--	--		
A-5	08-29-96	13.51	10 60	ND	2.91	08-29-96	7,700	490	450	260	990	<30	--	--		
A-5	11-21-96	13 51	10.05	ND	3.46	11-21-96	8,000	450	550	340	1,100	<30	--	--		
A-5	03-26-97	13.51	9 87	ND	3 64	03-26-97	3,100	190	140	130	340	<30	--	--		
A-5	05-21-97	13.51	10.25	ND	3.26	05-21-97	16,000	1,500	900	700	2,700	<120	--	--		
A-5	08-08-97	13.51	10.42	ND	3.09	08-08-97	9,000	690	240	440	1,300	<30	--	--		
A-5	11-18-97	13.51	Not surveyed: well inaccessible													
A-5	02-20-98	13.51	Not surveyed· well inaccessible													
A-5	05-11-98	13.51	Not surveyed: well inaccessible													
A-5	07-30-98	13.51	Not surveyed: well inaccessible													
A-5	10-08-98	13.51	Not surveyed. well inaccessible													
A-5	02-18-99	13.51	7.63	ND	5 88	02-18-99	<50	0 8	<0.5	<0.5	1.5	<10	--	--		
A-5	05-26-99	13.51	9.85	ND	3.66	05-26-99	1,700	240	41	110	330	<12	--	--		
A-5	08-23-99	13.51	10.60	ND	2.91	08-23-99	560	65	3	30	52	<6	--	--	0.73	NP
A-5	10-27-99	13.51	10.72	ND	2.79	10-27-99	480	93	1.0	16	19	<3	--	--	0 65	NP

Table 1
Historical Groundwater Elevation and Analytical Data
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ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-5	01-31-00	13.51	9.37	ND	4.14	01-31-00	Not sampled- well was inaccessible									
A-6	03-24-95	13.51	7.89	ND	5.62	03-24-95	120	<0.5	<1	<0 5	<1.5	--	--	--		
A-6	06-05-95	13.51	10.06	ND	3.45	06-05-95	160	<0.5	<0 6	<0 5	<0.5	--	--	--		
A-6	08-17-95	13.51	11.10	ND	2.41	08-18-95	530	<0.5	<0.5	<2.4	<4.2	6	--	--		
A-6	12-04-95	13 51	11.52	ND	1.99	12-04-95	28,000	1,600	1,800	880	3,600	--	--	--		
A-6	03-01-96	13.51	8.21	ND	5.30	03-13-96	1,400	<3	<15	<7	<10	<20	--	--		
A-6	05-29-96	13.51	9 25	ND	4.26	05-29-96	410	<2	<2	<2	<2	3	--	--		
A-6	08-29-96	13.51	10.52	ND	2 99	08-29-96	80	<0.5	<0.5	<0.5	<0.5	6	--	--		
A-6	11-21-96	13.51	10.54	ND	2.97	11-21-96	62	<0.5	<0.5	<0.5	<0.5	12	--	--		
A-6	03-26-97	13.51	9.93	ND	3.58	03-26-97	110	<0.5	0 8	1	1 4	15	--	--		
A-6	05-21-97	13.51	10.54	ND	2.97	05-21-97	600	0 6	0.6	<2	2.7	<3	--	--		
A-6	08-08-97	13 51	10.77	ND	2.74	08-08-97	850	<0.5	<0.5	6.1	<0.5	<4	--	--		
A-6	11-18-97	13.51	3.41	ND	10 10	11-18-97	690	<1	<1	3	2	7	--	--		
A-6	02-20-98	13.51	6 73	ND	6.78	02-20-98	60	<0.5	0.6	1.3	0.5	4	--	--		
A-6	05-11-98	13.51	9.26	ND	4 25	05-11-98	140	<0.5	0.7	0.6	<0.5	6	--	--		
A-6	07-30-98	13.51	10.12	ND	3.39	07-30-98	910	<2	<2	3	7	34	--	--		
A-6	10-08-98	13.51	10.53	ND	2.98	10-08-98	1,300	<2	4	3	4	21	--	--		
A-6	02-18-99	13.51	7.50	ND	6.01	02-18-99	150	<0 5	<0.5	1.4	1.7	35	--	--		
A-6	05-26-99	13 51	10.00	ND	3 51	05-26-99	100	<0.5	<0 5	<0 5	<0.5	17	--	--		
A-6	08-23-99	13.51	10.70	ND	2.81	08-23-99	98	0.6	<0 5	1.1	4.3	13	--	--	2.42	NP
A-6	10-27-99	13.51	11.00	ND	2.51	10-27-99	<50	<0.5	<0.5	<0.5	<1	7	--	--	13.23	NP
A-6	01-31-00	13 51	9 31	ND	4 20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP
AR-1	03-24-95	15.61	7.25	ND	8.36	03-24-95	270	14	0.6	2.5	2.1	--	--	130		
AR-1	06-05-95	15 61	11.37	ND	4.24	06-05-95	190	10	<0.5	0 8	0.5	--	--	580		
AR-1	08-17-95	15.61	12.40	ND	3.21	08-17-95	960	110	12	4.5	150	14	--	<50		

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ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
AR-1	12-04-95	15.61	12.90	ND	2.71	12-04-95	<50	1.5	<0.5	<0 5	0.8	--	--	--		
AR-1	03-01-96	15.61	8.19	ND	7.42	03-13-96	150	3.8	0 5	1.4	1 3	<3	--	--		
AR-1	05-29-96	15.61	10.41	ND	5.20	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-29-96	15.61	12.12	ND	3.49	08-29-96	<50	<0.5	<0.5	<0.5	0 8	<3	--	--		
AR-1	11-21-96	15.61	11.52	ND	4.09	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	03-26-97	15.61	11.33	ND	4.28	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-1	05-21-97	15.61	12.02	ND	3 59	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-08-97	15.61	12 31	ND	3.30	08-08-97	<50	0.7	<0.5	1	<0.5	<3	--	--		
AR-1	11-18-97	15.61	3.97	ND	11.64	11-18-97	Not sampled. well sampled semi-annually, during the first and third quarters									
AR-1	02-20-98	15.61	6.42	ND	9.19	02-23-98	<200	<2	<2	<2	<2	160	--	--		
AR-1	05-11-98	15 61	10.93	ND	4 68	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	4	--	--		
AR-1	07-30-98	15.61	11.82	ND	3.79	07-30-98	<50	<0.5	<0.5	<0.5	<0 5	6	--	--		
AR-1	10-08-98	15 61	12 24	ND	3.37	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		
AR-1	02-18-99	15.61	7.75	ND	7 86	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--		
AR-1	05-26-99	15.61	11.62	ND	3.99	05-26-99	<50	<0.5	<0.5	<0 5	<0.5	<3	--	--		
AR-1	08-23-99	15 61	9.32	ND	6.29	08-23-99	Not sampled· well sampled semi-annually, during the first and second quarters									
AR-1	10-27-99	15.61	12.14	ND	3.47	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-1	01-31-00	15 61	Not surveyed: well inaccessible													
AR-2	03-24-95	15.28	9.13	ND	6.15	03-24-95	<50	6.2	<0.5	<0.5	0.6	--	--	<50		
AR-2	06-05-95	15.28	12.09	ND	3 19	06-05-95	<50	<0.5	<0.5	<0.5	<0 5	--	--	<50		
AR-2	08-17-95	15.28	12.78	ND	2.50	08-18-95	<50	<0.5	<0.5	<0.5	<0.5	4	--	<50		
AR-2	12-04-95	15.28	11.44	ND	3.84	12-13-95	<50	<0.5	<0 5	<0.5	<0.5	--	--	--		
AR-2	03-01-96	15.28	9.83	ND	5.45	03-13-96	190	26	2.6	3.3	13	200	--	--		
AR-2	05-29-96	15.28	10 97	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	08-29-96	15.28	12.20	ND	3 08	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	95	--	--		
AR-2	11-21-96	15.28	11.57	ND	3.71	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									

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Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
AR-2	03-26-97	15.28	11.60	ND	3.68	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	9	--	--		
AR-2	05-21-97	15.28	12.12	ND	3.16	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	08-08-97	15.28	12.35	ND	2.93	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	11-18-97	15.28	3.48	ND	11.80	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	02-20-98	15.28	8.00	ND	7.28	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	43	--	--		
AR-2	05-11-98	15.28	10.97	ND	4.31	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	07-30-98	15.28	11.76	ND	3.52	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	10-08-98	15 28	12.17	ND	3.11	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	02-18-99	15.28	9.17	ND	6.11	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--		
AR-2	05-26-99	15 28	11.72	ND	3.56	05-26-99	<50	<0.5	<0 5	<0.5	<0.5	<3	--	--		
AR-2	08-23-99	15.28	12.31	ND	2.97	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.61	
AR-2	10-27-99	15.28	12.42	ND	2.86	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-2	01-31-00	15.28	10.31	ND	4.97	01-31-00	Not sampled									
ADR-1	03-24-95	13.95	8.04	0 01	** 5.92	03-24-95	Not sampled: well contained floating product									
ADR-1	06-05-95	13.95	11.02	ND	2.93	06-05-95	23,000	310	420	300	1,900	--	--	13,000		
ADR-1	08-17-95	13.95	11.86	ND	2.09	08-18-95	4,400	150	120	95	620	120	--	4,500		
ADR-1	12-04-95	13.95	10.05	ND	3.90	12-13-95	8,800	100	130	120	990	--	--	--		
ADR-1	03-01-96	13.95	8.76	ND	5.19	03-13-96	89,000	370	1,000	840	8,100	<500	--	--		
ADR-1	05-29-96	13.95	9.74	ND	4.21	05-30-96	27,000	230	380	370	2,700	<100	--	--		
ADR-1	08-29-96	13.95	10.77	ND	3.18	08-29-96	5,300	190	58	76	470	85	--	--		
ADR-1	11-21-96	13.95	10.49	ND	3.46	11-21-96	1,900	82	21	32	270	110	--	--		
ADR-1	03-26-97	13.95	10.37	ND	3.58	03-26-97	1,300	260	6	39	27	95	--	--		
ADR-1	05-21-97	13.95	10.90	ND	3.05	05-21-97	2,100	300	18	37	200	79	--	--		
ADR-1	08-08-97	13.95	11.12	ND	2.83	08-08-97	3,900	620	49	110	470	<200	--	--		
ADR-1	11-18-97	13.95	3.47	ND	10.48	11-18-97	18,000	900	140	360	2,700	<60	--	--		
ADR-1	02-20-98	13 95	Not surveyed: well inaccessible													

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ADR-1	05-11-98	13.95	Not surveyed: well inaccessible													
ADR-1	07-30-98	13.95	Not surveyed: well inaccessible													
ADR-1	10-08-98	13.95	Not surveyed: well inaccessible													
ADR-1	02-18-99	13.95	7.80	ND	6.15	02-18-99	200	4.4	<0 5	1.3	1.3	43	--	--		
ADR-1	05-26-99	13.95	10.40	ND	3.55	05-26-99	160	10	<0.5	1.7	1 8	43	--	--		
ADR-1	08-23-99	13.95	10.70	ND	3.25	08-23-99	7,400	310	16	210	970	18	--	--	0.37	NP
ADR-1	10-27-99	13.95	10.82	ND	3.13	10-27-99	5,000	210	6.3	180	490	5	--	--	0.73	NP
ADR-1	01-31-00	13.95	9.21	ND	4.74	01-31-00	290	3.6	<0.5	1.1	<1	26	--	--	1.0	NP
ADR-2	03-24-95	14.64	8.41	>3 00	NR[1]	03-24-95	Not sampled: well contained floating product									
ADR-2	06-05-95	14.64	11.45	>3.00	NR[1]	06-05-95	Not sampled: well contained floating product									
ADR-2	08-17-95	14.64	12.10	0.03	** 2 56	08-17-95	Not sampled· well contained floating product									
ADR-2	12-04-95	14.64	10.93	0.03	** 3.73	12-13-95	Not sampled. well contained floating product									
ADR-2	03-01-96	14.64	8.74	ND	5.90	03-13-96	29,000	1,100	1,200	710	3,800	<500	--	--		
ADR-2	05-29-96	14.64	10.43	ND	4 21	05-29-96	33,000	510	500	470	2,300	120	--	--		
ADR-2	08-29-96	14.64	11.64	ND	3.00	08-29-96	8,000	230	180	150	730	53	--	--		
ADR-2	11-21-96	14.64	11.23	ND	3.41	11-21-96	15,000	630	440	390	2,100	75	--	--		
ADR-2	03-26-97	14.64	11.13	ND	3.51	03-26-97	6,100	320	23	180	400	32	--	--		
ADR-2	05-21-97	14 64	11.64	ND	3.00	05-21-97	6,100	380	22	210	320	<30	--	--		
ADR-2	08-08-97	14.64	11.85	ND	2.79	08-08-97	8,400	380	35	230	910	<30	--	--		
ADR-2	11-18-97	14 64	3.33	ND	11 31	11-18-97	11,000	230	29	300	1,200	<60	--	--		
ADR-2	02-20-98	14.64	7.67	ND	6.97	02-20-98	4,700	320	30	130	360	20	--	--		
ADR-2	05-11-98	14.64	10.47	ND	4.17	05-11-98	Not sampled									
ADR-2	07-30-98	14.64	Not surveyed: well inaccessible													
ADR-2	10-08-98	14.64	11.67	ND	2.97	10-08-98	Not sampled									
ADR-2	02-18-99	14.64	Not surveyed: well inaccessible													
ADR-2	05-26-99	14.64	11.02	ND	3.62	05-26-99	5,900	670	5	340	104	16	--	--		

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ADR-2	08-23-99	14 64	9.82	ND	4.82	08-23-99	9,100	570	12	410	1,000	28	--	--	0.50	NP
ADR-2	10-27-99	14.64	9 85	Sheen	4.79	10-27-99	Not sampled: sheen present								0.65	NP
ADR-2	01-31-00	14.64	10.15	ND	4.49	01-31-00	7,700	280	3.4	370	390	23	--	--	2.0	NP

TOC top of casing
ft-MSL elevation in feet, relative to mean sea level
TPH total petroleum hydrocarbons, California DHS LUFT Method
BTEX benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B (EPA method 8020 prior to 10/27/99)
MTBE Methyl tert-butyl ether
µg/L micrograms per liter
mg/L milligrams per liter
ND none detected
NR not reported, data not available or not measurable
-- not analyzed or not applicable
< denotes concentration not present at or above laboratory detection limit stated to the right
[1] well contained more than 3 feet of floating product, exact product thickness and groundwater elevation could not be measured
* EPA method 8020 prior to 10/27/99
** [corrected elevation (Z')] = Z + (h * 0 73) where Z = measured elevation, h = floating product thickness, 0 73 = density ratio of oil to water
*** For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 2169, 889 West Grand Avenue, Oakland, California, (EMCON, March 4, 1996).*

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
03-24-95	Northwest	0.009
06-05-95	Northwest	0.002
08-17-95	West	0.001
12-04-95	North-Northwest	0.002
03-01-96	Northwest	0.003
05-29-96	Northwest	0.002
08-29-96	West	0.002
11-21-96	West-Northwest	0.002
03-26-97	Northwest	0.002
05-21-97	North-Northwest	0.002
08-08-97	North-Northwest	0.002
11-18-97	North-Northwest	0.003
02-20-98	North	0.013
05-11-98	North	0.03
07-30-98	North	0.002
10-08-98	North-Northwest	0.002
02-18-99	Northwest	0.008
05-26-99	North-Northwest	0.003
08-23-99	Variable	Variable
10-27-99	Variable	Variable
01-31-00	**West-Northwest**	**0.006**

TABLE 3

SVE SYSTEM ANALYTICAL RESULTS

ARCO Service Station No. 2169
889 West Grand Avenue
Oakland, California

Sample I.D.	Date	Benzene (ppmv)	Toluene (ppmv)	Ethyl-benzene (ppmv)	Total Xylenes (ppmv)	Purgeable Hydrocarbons (ppmv)	Methane (ppmv)
Influent	09/20/00	5.56	1.0	<0.12	0.88	246	47,000
Effluent	09/20/00	<0.016	<0.013	<0.012	<0.012	<2.4	5,700
Influent	10/23/00	<0.016	<0.013	<0.012	0 104	27.7	NA
Effluent	10/23/00	<0.016	<0.013	<0.012	<0.012	<2.4	NA
Influent	11/07/00	NA	NA	NA	NA	NA	>10,000[a]
Effluent	11/17/01	NA	NA	NA	NA	NA	>10,000[a]
Influent	12/26/00	NA	NA	NA	NA	NA	NM
Effluent	12/26/00	NA	NA	NA	NA	NA	NM
Influent	01/18/01	NA	NA	NA	NA	NA	1,200[a]
Effluent	01/18/01	NA	NA	NA	NA	NA	1,200[a]
Influent	02/06/01	NA	NA	NA	NA	NA	1,100[a]
Effluent	02/06/01	NA	NA	NA	NA	NA	1,100[a]
Influent	3/20/2001[b]	NA	NA	NA	NA	NA	NM
Effluent	3/20/2001[b]	NA	NA	NA	NA	NA	NM
Influent	04/26/01	0.0340	<0.013	<0.012	0.038	2.92	11,000
Effluent	04/26/01	<0.016	<0.013	<0.012	<0 012	<2.8	4,800
Influent	05/30/01	NA	NA	NA	NA	NA	>10,000[a]
Effluent	05/30/01	NA	NA	NA	NA	NA	>10,000[a]
Influent	06/12/01	NA	NA	NA	NA	NA	>10,000[a]
Effluent	06/12/01	NA	NA	NA	NA	NA	>10,000[a]
Influent	07/11/01	NA	NA	NA	NA	NA	>10,000[a]
Effluent	07/11/01	NA	NA	NA	NA	NA	>10,000[a]
Influent	08/01/01	NA	NA	NA	NA	NA	>10,000[a]
Effluent	08/01/01	NA	NA	NA	NA	NA	>10,000[a]
Influent	09/18/01	NA	NA	NA	NA	NA	>10,000[a]
Effluent	09/18/01	NA	NA	NA	NA	NA	>10,000[a]
Influent Total	10/02/01	1.6	0.45	0.092	0 29	51	27,000
Influent Cat	10/02/01	0.41	0.14	<0.012	0.08	15	23,000
Effluent	10/02/01	<0.016	<0.013	<0.012	<0.012	<2.8	11,000

Please refer to Appendix B for Historical System Anallyticals.

TABLE 3

SVE SYSTEM ANALYTICAL RESULTS

ARCO Service Station No. 2169
889 West Grand Avenue
Oakland, California

Sample I.D.	Date	Benzene (ppmv)	Toluene (ppmv)	Ethyl-benzene (ppmv)	Total Xylenes (ppmv)	Purgeable Hydrocarbons (ppmv)	Methane (ppmv)
Influent Total	11/06/01	<0.16	0.31	0.12	<0.12	140	>10,000[a]
Influent Cat	11/06/01	<0.16	<0.13	<0.12	<0 12	37	>10,000[a]
Effluent	11/06/01	<0.016	<0.013	<0.012	<0 012	4.1	12[a]
Influent Total	12/04/01	0.023	0.014	<0.012	<0.012	<2.8	1,000[a]
Influent Cat	12/04/01	<0.016	<0.013	<0.012	<0.012	<2.8	3,200[a]
Effluent	12/04/01	<0.016	<0.013	<0.012	<0.012	<2 8	550[a]

ppmv = parts per million by volume

NS = Not sampled

NA = Not analyzed

NM = Not measured

[a] Methane reading from field flame ionization dectector reading

[b] System down due to site construction activities

Please refer to Appendix B for Historical System Anallyticals.

Table 3
Soil Vapor Extraction System
Operational Uptime Information (1998 - present)
Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date	Meter (hrs.)	Operation (hrs.)	Period Operation				Cumulative Operation			
			Total (days)	Uptime (days)	Downtime (days)	Uptime (%)	Total (days)	Uptime (days)	Downtime (days)	Uptime (%)
04/01/98[1]	7365.55	6909.60					1399	287.9	1111.1	21%
04/15/98	7365.55	6909.60								
06/22/98	7365.78	6909.83	68	0.0	68.0	0%	1467	287.9	1179.1	20%
08/20/98	7365.78	6909.83	59	0.0	59.0	0%	1526	287.9	1238.1	19%
10/07/98	7366.69	6910.74	48	0.0	48.0	0%	1574	287.9	1286.1	18%
10/08/98	7392.07	6936.12	1	1	0	100%	1575	289.0	1286.0	18%
10/30/98	7752.82	7296.87	22	15.0	7.0	68%	1597	304.0	1293.0	19%
11/18/98	7755.18	7299.23	19	0.1	18.9	1%	1616	304.1	1311.9	19%
11/25/98	7869.69	7413.74	7	4.8	2.2	68%	1623	308.9	1314.1	19%
12/08/98	8182.76	7726.81	13	13.0	0.0	100%	1636	322.0	1314.0	20%
02/05/99	8183.26	7727.31	59	0.0	59.0	0%	1695	322.0	1373.0	19%
03/19/99	8183.56	7727.61	42	0.0	42.0	0%	1737	322.0	1415.0	19%
04/27/99	8183.56	7727.61	39	0.0	39.0	0%	1776	322.0	1454.0	18%
06/21/99	8183.88	7727.93	55	0.0	55.0	0%	1831	322.0	1509.0	18%
06/24/99	8260.48	7804.53	3	3	0	106%	1834	325.2	1508.8	18%
08/19/99	8260.48	7804.53	56	0	56	0%	1890	325.2	1564.8	17%
08/25/99	8360.47	7904.52	6	4	2	69%	1896	329.4	1566.6	17%
09/08/99	8695.25	8239.3	14	14	0	100%	1910	343.3	1566.7	18%
09/09/99	8706.53	8250.58	1	0	1	47%	1911	343.8	1567.2	18%
09/21/99	8994.92	8538.97	12	12	0	100%	1923	355.8	1567.2	19%
10/05/99	9331.19	8875.24	14	14	0	100%	1937	369.8	1567.2	19%
10/19/99	9667.61	9211.66	14	14	0	100%	1951	383.8	1567.2	20%
11/03/99	10026.92	9570.97	15	15	0	100%	1966	398.8	1567.2	20%
11/17/99	10364.01	9908.06	14	14	0	100%	1980	412.8	1567.2	21%
12/01/99	10699.82	10243.87	14	14	0	100%	1994	426.8	1567.2	21%
12/16/99	11059.81	10603.86	15	15	0	100%	2009	441.8	1567.2	22%
01/05/00	11060.05	10604.1	20	0	20	0%	2029	441.8	1587.2	22%

[1] Operational data through 04/01/98 from First Quarter 1998 Quarterly Monitoring Report

Table 4
Soil Vapor Extraction System
Flow Rates and Analytical Results of Air Samples (1998 - present)

Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date	Sample Location	Vacuum (in. H20)	Velocity (fpm)	Flowrate[1] (scfm)	Analyses (ppmv)					
					TPHG	Benzene	Toulene	Ethylbenzene	Xylene	MTBE
10/08/98	Influent	21.2	750	35	190	<0.1	<0.1	<0.1	0.2	
	Effluent[2]		3600	274.2	<5	<0.1	<0.1	<0.1	<0.2	
11/18/98	Influent	21	900	42	83	<0.1	0.4	0.4	0.9	
	Effluent		3300	253.4	<5	<0.1	<0.1	<0.1	<0.2	
12/08/98	Influent	25	1100	51	12	<0.1	0.3	<0.1	0.2	<0.8
	Effluent		3100	238.0	6	<0.1	0.3	<0.1	0.2	<0.8
06/21/99	Influent	40	1000	44	20	0.1	0.1	<0.1	<0.2	<0.8
	Effluent		2500	192.0	<5	<0.1	<0.1	<0.1	<0.2	<0.8
08/19/99	Influent	39.2	800	35	180	6.9	0.9	0.15	0.32	5.5
	Effluent		2800	215.0	<2.4	0.05	<0.013	<0.012	0.03	0.13
09/08/99	Influent	50.2	1500	65	71	0.2	0.2	0.2	0.9	1.1
	Effluent		2300	176.6	<5	<0.1	<0.1	<0.1	<0.2	<0.8
10/05/99	Influent	59	1700	71	42	0.3	<0.1	<0.1	0.3	<0.8
	Effluent		2300	176.6	<5	<0.1	0.1	<0.1	<0.2	<0.8
11/03/99	Influent	50	1700	73	240	<0.1	0.2	0.2	3.9	1.3
	Effluent		2200	168.9	<5	<0.1	<0.1	<0.1	<0.2	<0.8
12/01/99	Influent	50.1	1000	43	180	0.2	0.1	<0.1	2.3	<0.8
	Effluent		1250	96.0	<5	<0.1	0.2	<0.1	<0.2	<0.8

[1] Influent Flow Rate, cfm = (Velocity, fpm)(Influent Pipe Area, sq. ft.)(406 8 in.H20 - Vacuum, in.H20) / (406 8 in.H20)
where Influent Pipe Diameter = 3"
Effluent Flow Rate, cfm = (Velocity, fpm)(Effluent Pipe Area, sq.ft.)[(460° R + 77° F)/(460° R + Vapor Temp F)]
where Effluent (after blower) Pipe Diameter = 4"

[2] Dilution air only

TABLE 4

SVE SYSTEM MONITORING TABLE

Arco Service Station No.2169
889 West Grand Avenue
Oakland, California

Date Sampled	Total Inlet Flow Rate (ft^3/min)	Stack Flow Rate (ft^3/min)	Hour Meter Reading	Change in Hours of Operation	TPHg Influent (ppmv)	TPHg Effluent (ppmv)	Benzene Influent (ppmv)	Benzene Effluent (ppmv)	TPHg Extraction Rate (lbs/day)	TPHg Mass Emission (lbs/day)	Benzene Extraction Rate (lbs/day)	Benzene Emission Rate (lbs/day)	Cumulative Volume of Processed Air (cubic feet)	Period TPHg Extraction (lbs)	Cumulative TPHg Extraction (lbs)
12/01/99	43	72	10,700	673	180	<5.0	0 2	<0.1	2.48	< 0.12	0.003	< 0.002	0 00 E+00	NC	9,010
09/20/00	175	204	11,062	362	246	<2 4	5.56	<0.016	13 74	<0.16	0.012	<0.001	4.42 E+06	122.3	9,132
10/23/00	183	212	11,062	0	27.7	<2.4	<0.016	<0.016	1.62	<0.16	<0.0008	<0.001	4.42 E+06	0	9,132
11/07/00	121	152	11,420	358	NS	NS	NS	NS	NC	NC	NC	NC	7.69 E+06	12.10	9,144
12/26/00[a]	0	0	11,420	0	NS	NS	NS	NS	NC	NC	NC	NC	7.69 E+06	NC	9,144
01/18/01	228	257	11,421	1	0 [b]	0 [b]	NS	NS	0 [b]	0 [b]	NC	NC	7.71 E+06	0	9,144
02/06/01	228	257	11,422	1	0 [b]	0 [b]	NS	NS	0 [b]	0 [b]	NC	NC	7.72 E+06	0	9,144
03/20/01[c]	0	0	11,422	0	NS	NS	NS	NS	NC	NC	NC	NC	7 72 E+06	0	9,144
04/26/01	175	204	11,423	1	2.92	<2.8	0.034	<0.016	0.16	<0.18	0.0017	<0.001	7.74 E+06	0	9,144
05/30/01	175	204	11,423	0	0 [b]	0 [b]	NS	NS	0 [b]	0 [b]	NC	NC	7.74 E+06	0	9,144
06/12/01	175	204	11,423	0	0 [b]	0 [b]	NS	NS	0 [b]	0 [b]	NC	NC	7 74 E+06	0	9,144
07/11/01	191	220	11,423	0	0[b]	0[b]	NS	NS	0 [b]	0 [b]	NC	NC	7 74 E+06	0	9,144
08/01/01	187	216	11,423	0	0[b]	0[b]	NS	NS	0 [b]	0 [b]	NC	NC	7.74 E+06	0	9,144
09/18/01	151	180	11,426	3	0[b]	0[b]	NS	NS	0 [b]	0 [b]	NC	NC	7.78 E+06	0	9,144
10/02/01	169	211	11,429	3	51	<2.8	1.6	<0.016	2.756	< 0.189	0.078	< 0.001	7.82 E+06	0.37	9,144
11/06/01	123	136	12,268	839	140	4.1	<0.16	<0.016	5.524	0.178	< 0.006	< 0 001	1.65 E+07	144.66	9,289
12/04/01	116	172	12,941	673	<2.8	<2.8	<0 016	<0.016	< 0.104	< 0.154	< 0.001	< 0 001	2 28 E+07	78.89	9,368

TPHg = Total petroleum hydrocarbons as gasoline.

ppmv = Parts per million by volume.

NS = Not Sampled

NC= Not Calculated

[a] Power interupt-system did not operate

[b] No samples collected, only FID results

[c] System off due to site construction activities.

Note: Flow rates, extraction and emmission rates were corrected from 9/20/00 through 02/06/01 due to previous faulty flow readings. Hour meters admusted from 4/26/01 through 6/12/01 due to possible mis-reading

Please refer to Appendix B for historical SVE system data.

Table 5
Soil Vapor Extraction System
Extraction Rates, Emission Rates, Destruction Efficiency, and Mass Removed
(1998 - present)

Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date End	Extraction Rate from Wellfield[1]		Emission Rate to Atmosphere[2]		Destruction Efficiency[3]		Period Removal[4]		Cumulative Removal	
	TPHG (lbs/day)	Benzene (lbs/day)	TPHG (lbs/day)	Benzene (lbs/day)	TPHG (%)	Benzene (%)	TPHG (lbs)	Benzene (lbs)	TPHG (lbs)	Benzene (lbs)
04/01/98[5]									8582.1	0
10/08/98	2.4351	0.0	<0.5037	<0.0079	Waived		39.5329	0	8621.6	0
11/18/98	1.2772	0.0	<0.4655	<0.0073	Waived		22.7538	0	8644.4	0
12/08/98	0.2233	0.0	0.5248	<0.0068	Waived		0.0104	0	8644.4	0
06/21/99	0.3251	0.0013	<0.3527	<0.0055	Waived		1.0376	0.0041	8645.4	0.0041
08/19/99	2.3459	0.0702	<0.1896	<0.0031	Waived		42.4964	1.2723	8687.9	1.2763
09/08/99	1.6830	0.0037	<0.3245	<0.0051	Waived		21.0150	0.0462	8708.9	1.3226
10/05/99	1.1005	0.0061	<0.3245	<0.0051	Waived		30.8459	0.1721	8739.8	1.4946
11/03/99	6.4514	0.0021	<0.3104	<0.0048	Waived		187.1967	0.0609	8927.0	1.5555
12/01/99	2.8454	0.0025	<0.1763	<0.0028	Waived		82.5210	0.0716	9009.5	1.6272

[1] Extraction Rate, lbs/day = (Influent Flow, cfm)(Influent conc., ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24 45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78.1 g/mole, Influent conc. = 0, if reported as non-detect

[2] Emission Rate, lbs/day = (Effluent Flow, cfm)(Effluent conc , ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24.45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78.1 g/mole; Effluent conc. = Method Reporting Limit, if reported as non-detect

[3] Destruction Efficiency, % = (Extraction Rate - Emission Rate)(100) / (Extraction Rate); "Waived"= if TPHG emissions <1.0 lbs/day and Benzene emissions <0.02 lbs/day

[4] Period Removal, lbs = (Extraction Rate)(Uptime)

[5] Operational data through 4/1/98 from First Quarter 1998 Quarterly Monitoring Report

ATTACHMENT D

EDCC REPORT AND EDF/GEOWELL SUBMITTAL CONFIRMATION

...mmary Log

EDF 1.2i All files present in deliverable.

Laboratory:	Sequoia Analytical Laboratories, Inc., Morgan Hill, CA
Project Name:	ARCO #2169, Oakland, Ca
Work Order Number:	MLL0092
Global ID:	T0600100112
Lab Report Number:	MLL0092122420020717

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Lablotctl	Run Sub
MLL00921224200 20717	A-1	MLL009201	W	CS	8260+OX	SW5035	11/27/02	12/10/02	12/10/02	2L10015	1
MLL00921224200 20717	A-5	MLL009202	W	CS	8260+OX	SW5035	11/27/02	12/09/02	12/10/02	2L09008	1
MLL00921224200 20717	A-6	MLL009203	W	CS	8260+OX	SW5035	11/27/02	12/09/02	12/10/02	2L09008	1
MLL00921224200 20717	ADR-1	MLL009204	W	CS	8260+OX	SW5035	11/27/02	12/09/02	12/10/02	2L09008	1
MLL00921224200 20717	ADR-2	MLL009205	W	CS	8260+OX	SW5035	11/27/02	12/09/02	12/10/02	2L09008	1
		2L09008BSD1	WQ	BD1	8260+OX	SW5035	/ /	12/09/02	12/10/02	2L09008	1
		2L09008BSD2	WQ	BD2	8260+OX	SW5035	/ /	12/09/02	12/10/02	2L09008	1
		2L09008BS1	WQ	BS1	8260+OX	SW5035	/ /	12/09/02	12/09/02	2L09008	1
		2L09008BS2	WQ	BS2	8260+OX	SW5035	/ /	12/09/02	12/09/02	2L09008	1
		2L09008BLK1	WQ	LB1	8260+OX	SW5035	/ /	12/09/02	12/09/02	2L09008	1
		2L10015BSD1	WQ	BD1	8260+OX	SW5035	/ /	12/10/02	12/10/02	2L10015	1
		2L10015BSD2	WQ	BD2	8260+OX	SW5035	/ /	12/10/02	12/10/02	2L10015	1
		2L10015BS1	WQ	BS1	8260+OX	SW5035	/ /	12/10/02	12/10/02	2L10015	1
		2L10015BS2	WQ	BS2	8260+OX	SW5035	/ /	12/10/02	12/10/02	2L10015	1
		2L10015BLK1	WQ	LB1	8260+OX	SW5035	/ /	12/10/02	12/10/02	2L10015	1

EDFSAMP: Error Summary Log

02/24/03

Error type	Logcode	Projname	Npdlwo	Sampid	Matrix
There are no errors in this data file					

EDFTEST: Error Summary Log

02/24/03

Error type	Labsampid	Qccode	Anmcode	Exmcode	Anadate	Run number
There are no errors in this data file					/ /	0

EDFRES: Error Summary Log

02/24/03

Error type	Labsampid	Qccode	Matrix	Anmcode	Pvccode	Anadate	Run number	Parlabel
Warning: extra parameter	MLL009201	CS	W	8260+OX	PR	12/10/02	1	GROC6C10
Warning: extra parameter	MLL009201	CS	W	8260+OX	PR	12/10/02	1	XYLENES
Warning: extra parameter	MLL009202	CS	W	8260+OX	PR	12/10/02	1	GROC6C10
Warning: extra parameter	MLL009202	CS	W	8260+OX	PR	12/10/02	1	XYLENES
Warning: extra parameter	MLL009203	CS	W	8260+OX	PR	12/10/02	1	GROC6C10
Warning: extra parameter	MLL009203	CS	W	8260+OX	PR	12/10/02	1	XYLENES
Warning: extra parameter	MLL009204	CS	W	8260+OX	PR	12/10/02	1	GROC6C10
Warning extra parameter	MLL009204	CS	W	8260+OX	PR	12/10/02	1	XYLENES
Warning: extra parameter	MLL009205	CS	W	8260+OX	PR	12/10/02	1	GROC6C10
Warning: extra parameter	MLL009205	CS	W	8260+OX	PR	12/10/02	1	XYLENES
Warning: extra parameter	2L09008BLK1	LB1	WQ	8260+OX	PR	12/09/02	1	GROC6C10
Warning: extra parameter	2L09008BLK1	LB1	WQ	8260+OX	PR	12/09/02	1	XYLENES
Warning: extra parameter	2L09008BS2	BS2	WQ	8260+OX	PR	12/09/02	1	GROC6C10
Warning. extra parameter	2L09008BSD2	BD2	WQ	8260+OX	PR	12/10/02	1	GROC6C10
Warning: extra parameter	2L10015BLK1	LB1	WQ	8260+OX	PR	12/10/02	1	GROC6C10
Warning: extra parameter	2L10015BLK1	LB1	WQ	8260+OX	PR	12/10/02	1	XYLENES
Warning: extra parameter	2L10015BS2	BS2	WQ	8260+OX	PR	12/10/02	1	GROC6C10
Warning: extra parameter	2L10015BSD2	BD2	WQ	8260+OX	PR	12/10/02	1	GROC6C10

EDFQC: Error Summary Log

02/24/03

Error type	Lablotctl	Anmcode	Parlabel	Qccode	Labqcid
There are no errors in this data files					

EDFCL: Error Summary Log

02/24/03

Error type	Clrevdate	Anmcode	Exmcode	Parlabel	Clcode
There are no errors in this data file	/ /				

AB2886 Electronic Delivery

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